Effects of self-validation on counterfactuals

A Senior Thesis

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Abstract

Counterfactuals, or mental simulations of alternative realities (e.g., "If I invite him to the wedding, then we will have to spend a lot of time together"), greatly influence judgment and decision making. In the current research, the certainty with which people held their counterfactuals was manipulated. Three potential explanations for the results of this research will be proposed. One possibility is that when people are certain of their counterfactual-relevant thoughts, they will serve to impact their behavior more. Another possibility is that doubt will increase the apparent impact of counterfactuals over certainty, either because doubt primes make the potential negative outcomes seem more negative, thereby increasing motivation to avoid them, or because certainty primes make people feel less worried about the negative outcomes because they have gained a sense of self-assurance from the certainty prime. To test these hypotheses, students were told to consider a hypothetical situation, generate relevant counterfactuals about one of two possible behavioral choices, and then were primed with either certainty or doubt. Finally, they were asked to choose between the two possible behaviors. Ultimately, the results were consistent with the second and third hypotheses: doubt was associated with greater impact of counterfactual-generation on behavior. This research contributes to the literature on counterfactuals by examining a novel hypothesis and suggesting mechanisms by which counterfactuals can be more or less impactful on subsequent choice.

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Introduction

People often simulate possible outcomes of various decisions they could make in a given situation by generating likely consequences of each possible choice (Roese, 1997). Then, the decision with the best potential outcome is selected. To illustrate, a woman debating whether or not to go to a wedding with an acquaintance might try to imagine all the possible implications before coming to the final decision that would most benefit her. For example, she may think, "If I go with him to this wedding, then we might become romantically interested in one another and that is a somewhat frightening idea. But if I don't go to this wedding, then I probably won't have fun next weekend." Similarly, people also spontaneously generate alternative scenarios for outcomes that they have already experienced (Roese, 1997). For example, after choosing to not invite an acquaintance to a wedding, a woman might think: "If only I had invited him, then I would have had someone to dance with during those slow songs." These sorts of thoughts can influence how people feel about the outcomes they have experienced and also influence future behavior in similar situations.

Counterfactuals

Both of the mental simulations about alternative realities discussed above are counterfactuals. Counterfactuals are a way of simulating past, present or future events by generating ideas about "what might have been" or "what may be." Thus, counterfactuals are simply "if…, then…" statements in which people make inferences about the ways in which factors of a situation could change that would in turn have changed the outcomes of that situation (Kahneman & Miller, 1986).

Research has shown that counterfactuals are included in mental simulation about future decisions: people generate counterfactuals in order to figure out how they will feel about the

outcomes of different decisions they can make. They then use those counterfactuals to decide which decision will result in less regret, should the outcome be negative (Hetts, Boninger, Armor, Gleicher, & Nathanson, 2000; Roese, 1994). In addition, counterfactuals can influence how people feel about their present situations, including judgments of life meaningfulness (Kray, George, Liljenquist, Galinsky, Tetlock, & Roese, 2010) and performance satisfaction (Medvec, Madey, & Gilovich, 1995). Counterfactuals can even determine how people make judgments about the consequences of other peoples' circumstances based on the corresponding decisions that they made. Examples of these thoughts include judgments about who is to blame for a negative occurrence (Branscombe, Owen, Garstka, & Coleman, 1996; Petrocelli, Percy, Sherman & Tormala, 2011).

Heretofore, researchers have focused on comparing different counterfactuals to one another (i.e., focus on undoing this or that aspect of the situation) or comparing the generation of counterfactuals to a control. These researchers have continually demonstrated how important counterfactuals are for evaluations of the self (Medvec et al., 1999), judgments of others (Branscombe et al. 2009, and Kray et al., 2010) and for future decisions (Hetts et al., 2000). However, researchers are only now beginning to focus on whether inferences about the counterfactuals themselves can increase or decrease their influence.

Factors Influencing the Impact of Counterfactuals

Very few factors have been tested with regard to whether or not they moderate the impact of counterfactuals on judgment or behavior. One of the inferences about counterfactuals that has been studied is "counterfactual potency", or the likelihood that some antecedent ("if…", also called the "if likelihood") occurs with some outcome ("then…", or the "then likelihood"). Petrocelli and colleagues (2011) have shown that "counterfactual potency" influences the impact

of the counterfactual (or the influence behind the counterfactual thought). In this research, participants were given a scenario, asked to generate counterfactuals, estimate the likelihoods associated with the antecedent (i.e., "if…" part of the counterfactual) and outcome (i.e., "then…" part of the counterfactual), and then make judgments of blame or responsibility. When people thought that the counterfactuals they generated were unlikely to happen, their judgments of blame or responsibility were reduced relative to when people thought that the counterfactuals they generated were likely.

Other research involves the ease of the counterfactual generation (Petrocelli & Dowd, 2009). In these studies, the researchers showed that when counterfactuals are difficult to generate (researchers did this by constructing scenarios that either fostered counterfactual thinking or that did not), the impact of the counterfactuals on related judgments were reduced compared to when counterfactual generation was easy. This effect was observed among people high in the need for cognition, an individual difference in people's propensity to engage in effortful thought (Cacioppo & Petty, 1982). People high in the need for cognition are more influenced by metacognition, or thoughts about their thoughts, like perceptions of ease (e.g., Tormala, Petty, & Briñol, 2002). This is consistent with the idea that the difficulty or ease of generation influenced metacognitions.

Counterfactual Certainty

Thus, previous research shows that people do make inferences about both the likelihood of (Petrocelli et al., 2011) and the ease of generating their counterfactuals (Petrocelli & Dowd, 2009), and that these inferences can affect the impact of the counterfactual on judgment, particularly among people who are predisposed to pay attention to their own thoughts (Petrocelli & Dowd, 2009). However, this research did not examine perhaps one of the most important

metacognitions (i.e., thoughts about thoughts) people can have: certainty. Certainty refers to how much trust or confidence people have in the validity of their their thoughts (Briñol & Petty, 2009). Ease of thought generation is one of many metacognitions that increase certainty (Tormala et al., 2007), so existing research on metacognitions that influence the impact of counterfactuals (e.g., Petrocelli et al., 2011; Petrocelli & Dowd, 2009) indirectly supports the possibility that certainty might also play a role in the influence of counterfactuals on judgment. However, people can be certain for many reasons in addition to ease, and ease can impact judgments for reasons other than certainty (Schwarz et al, 1991), so it is important to examine certainty on its own.

Self-validation of counterfactuals. Research on persuasion has shown that the thoughts people generate to persuasive messages are used more when people are certain of them (e.g., Petty et al., 2002; Briñol, Petty, & Tormala, 2004). To illustrate, Petty and colleagues (2002) found that when participants generated positive thoughts in response to a message or advertisement, increasing confidence in those thoughts increased the persuasiveness of the message or advertisement. However, when participants generated negative thoughts in response to a message or advertisement, increasing confidence in those negative thoughts decreased the persuasiveness of the message or advertisement.

The current research examines a self-validation approach to counterfactual impact. Counterfactuals are thoughts of a sort that people generate about the situations they encounter, so it seems likely that people can have thoughts about these counterfactual thoughts. Indeed, some of the prior research (Petrocelli & Dowd, 2009; Petrocelli et al., 2011) indicates that people do in fact make inferences about their counterfactual thoughts (e.g., ease and potency). As a result, manipulations that have previously shown to influence thought certainty might also work to

influence the certainty people have in their counterfactuals. If so, this difference in certainty could in turn produce differential impacts on decisions or judgments, such that people who are certain should use their counterfactuals more than people who are uncertain.

To test this idea, in the current research participants considered a counterfactual to a negative event that also resulted in a negative outcome. Following this, they were made to feel confidence or doubt. If the confidence or doubt generalizes to the thoughts about the counterfactual, then people should be more influenced by it. Thus, if people become more confident in thoughts about why they would regret having taken some action, they should be less likely to choose this action than if they had doubt in these thoughts.

Alternatives to Self-Validation

Although the self-validation hypothesis is the most straightforward prediction (i.e., increased certainty increasing counterfactual impact), two other possible effects of increasing the certainty in negative counterfactuals were considered. These are described next.

Bleeding Effect. In contrast to the self-validation hypothesis, it could also be the case that increasing feelings of doubt could cause the impact of the negative emotions associated with generating counterfactuals about negative events to increase, thus causing a larger effect of counterfactuals among people primed with doubt than among people primed with certainty. A considerable amount of research has been done to show that mood states influence cognition and judgments (for a review see Wyer, Clore, & Isbell, 1999). For example, Mayer, Gaschke, Braverman, & Evans, 1992, conducted a study which highlighted the effects of mood on judgment and found that those people who were primed with positive moods such as happiness were more likely to determine that the outcome of a given question as positive because they were subconsciously pulled to a positive valence by their moods. In contrast, those primed with

negative moods (such as guilt, fear, or sadness) were more likely to judge the outcome of a given question as negative.

According to this view, if the outcomes being considered in a counterfactual scenario are negative, it could be the case that manipulations that make people feel doubtful increases the impact of those counterfactuals. For instance, if the woman in the wedding situation described earlier is considering inviting a particular acquaintance, Sam, to a wedding and formulates a negative counterfactual about the possible experience: "If I invite him to come with me, then he will probably drink too much." After thinking this, if she is further reminded of another unpleasant time in her life where she had to deal with someone's intoxicated behavior (or any other negative event, for that matter), the negative feelings stemming from the memory further exacerbate the negative counterfactual she had made about Sam. In turn, this would make her even less likely to invite him.

Thus, in the current research, rather than doubt attenuating confidence in thoughts about some action not taken, the doubt would magnify the overall feeling of regret about not taking some action. This means that doubt would increase choice of that action rather than reduce it. It is also interesting to note that if this mechanism occurs, one would expect to find the opposite result for outcomes that are positive rather than negative. That is, if a person is considering a negative counterfactual and experiences positive affect, the resulting positive emotion may serve to counter the negativity of the counterfactual (i.e., reducing the feeling of regret), making it less impactful.

General Self-Confidence. A third possibility involves the effects that confidence has on decision making. Confident people are more certain of their decisions (Petty et al., 2002) and more optimistic (Briñol, Petty & Tormala, 2006; for review, Taylor & Brown, 1988). Similarly,

high self –esteem goes hand-in-hand with overall confidence an individual maintains in life (Cohen, 1959). In one study, participants who were designated as falling under high self-esteem (after completing a questionnaire) expected high success rates on tasks at a level consistent with their high self-esteem. Conversely, those categorized under low self-esteem expected lower success rates (McFarlin & Blascovich, 1981). These results further the notion that confident people are generally more confident in their decisions and actions.

Thus, it is possible that inducing people to feel certain may make them feel more confident in themselves overall rather than their particular thoughts or attitudes (see e.g., Loersch & Payne, 2011). Because people who are generally self-confident are more certain of their decisions and are generally more optimistic, they may be resistant to counterfactuals suggesting an otherwise negative outcome. These people discount the likelihood or the extremity of a potential negative outcome because they generally trust their decisions. Thus, if people feel self-confident, then they would not regret their decisions regardless of the outcome because of a belief that their choices are generally correct. If this mechanism were operating, those primed with confidence would not show an impact of the counterfactual scenario as much as those primed with doubt who would regret their prior decision or believe it was wrong, consistent with their low self-confidence.

Present Study

The purpose of the current research was to examine the impact of confidence on counterfactual judgments. The research aimed to see whether confidence or doubt following counterfactual thinking would increase the impact of the counterfactual (consistent with the self-validation mechanism) or whether it would reduce it (consistent with the bleeding effect and self-

confidence possibilities). Of importance, the research design used does not allow for distinguishing between the latter two hypotheses.

The present study examined the effects of a manipulation of certainty (Petty, Briñol, & Tormala, 2002) on a decision made about counterfactual scenarios. Following Hetts and colleagues (2000), participants were asked to imagine that they were on their way from the parking lot to a quiz in their next class when, halfway there, they forgot whether or not they locked their car. Half of the participants were then asked to think about how upset they would be had they gone straight to the quiz without going back to check their car and their car consequently got broken into (car regret condition), while the other half were asked to think about how upset they would be if they walked back to check their car, found out it was locked all along, and consequently missed their quiz (quiz regret condition). Both of these are upsetting events that would elicit negative thoughts. Participants then described a time in which they felt either "confident" or "doubtful" as part of an "unrelated study" (Petty et al., 2002). Finally participants were asked what they would do in the hypothetical situation.

To review, there are three potential outcomes for this experiment. From a self-validation perspective, one would expect to find that counterfactuals have more impact when they are held with certainty. This is because the negative thoughts elicited by the counterfactual scenario, if held with certainty, would be used more to affect choices than if these thoughts were held with doubt. For example, if participants were thinking about how upset they would be if they failed to walk back to the car and found out later that it was burglarized (car regret), they should be more likely to say they would walk back to the car rather than go to the quiz if made to feel certainty rather than doubt following thinking. From a bleeding-effect perspective, one would expect to find that counterfactuals involving undoing negative outcomes (like the scenario chosen for this

experiment) have more impact when they are preceded by a doubt prime, because the doubt prime would magnify the regret at the action not taken. Finally from a self-confidence perspective, one would expect people primed with confidence to show a lesser impact of counterfactual thinking than those primed with doubt because the confidence would make them dismiss changing from whatever course of action they thought of first.

Method

Participants and Design

Eighty-five introductory psychology students participated in exchange for course credit. Participants were assigned to the cells of a 2 (Counterfactual Direction: Car Regret or Quiz Regret) ×2 (Prime: Confidence or Doubt) between-participants design.

Procedure

Students participated in a computer lab in small groups of no more than 11. They were told that their participation involved performing several unrelated tasks.

First, participants took part in the regret scenario portion of the experiment, following Hetts and colleagues (Hetts et al., 2000). Participants were asked to imagine that they commuted to school and were on their way from a parking lot on campus to a class in which they had an important quiz. Further, they were asked to imagine that they were in a bit of a rush to make it in time for the quiz, and on the way to class they got a strange feeling that they may not have locked their car (see Appendix A). Then participants were asked to think about and list their thoughts on about one version of the scenario. Following the thought listing was the manipulation of confidence presented as part of an unrelated study. Then participants were asked whether or not they would go straight to class for the quiz, or go back to check on their car. Finally, participants were thanked for their participation, debriefed, and dismissed.

Independent Variables

Regret. Participants in the car regret condition were asked to think for a minute about how upset they would be if they did not go back to check their car and as a consequence, their car was burglarized (see Appendix B), while participants in the quiz regret condition were asked to think about how upset they would be if they went back to check their car, found out if had been locked the entire time and ended up missing the quiz (see Appendix C).

Certainty. The participants in the confident prime condition were told to think about and describe two instances in which they felt confident, and the participants in the doubt prime condition were told to think about and describe two instances in which they felt doubtful (Petty et al., 2002) (see Appendix D).[1]

Dependent Variable: Decision

To assess the decision the participants make regarding the regret scenarios, participants were asked to choose one answer from a scaled-reposing question asking if they would either: a. definitely go back to check the car, b. probably go back to check the car, c. probably go straight to the quiz, or d. definitely go straight to class for the quiz. The final decision made by the participants was scored on a scale of 1 to 4; a score of 1 meaning that they would go directly back to check their car and a score of 4 signifying that they would go directly to class for the quiz (see Appendix E).

Results

Replicating prior research, there was a main effect of counterfactual condition on choices, $F(1,81) = 7.43$, $p < 0.01$, such that people were more likely to choose to return to their car when

they were in the car regret condition (M = 2.31, SD = 1.093) than in the quiz regret condition (M = 2.86, SD = 0.889). The main effect of validation condition was not significant ($F < 1$).

This main effect was qualified by a significant interaction between the validation manipulation and counterfactual condition, F (1,81) = 4.11, p = 0.05 (see Figure **1**1). Simple effects analysis revealed that the effect of the counterfactual condition was significant among participants primed with doubt, F(1,81) = 10.68, $p < 0.01$, but not among participants primed with confidence, F (1,81) = 0.26, *ns*.

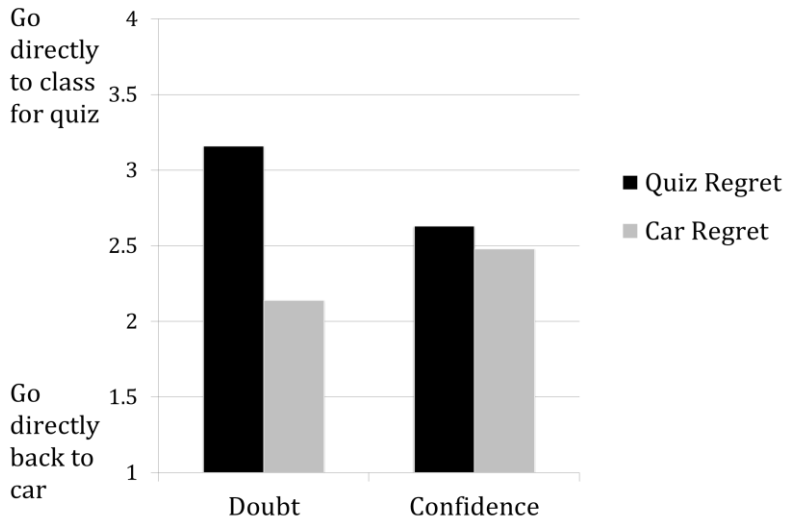

Figure 1: Results of self-validation effects on counterfactuals. Higher numbers indicate greater likelihood of going to the quiz rather than the car.

Discussion

The results of the study on which the materials for this study were based (Hetts et al., 2004) were replicated. Furthermore, an interaction between the confidence/doubt prime and counterfactual scenario showed that counterfactual thinking had a greater impact when doubt rather than confidence was activated. Thus, the results from this study instead are consistent both with the bleeding-effect perspective and the general self-confidence perspective rather than the self-validation hypothesis.

Specifically, regarding the "bleeding effect" in the context of our experiment, this would mean that those participants primed with doubt (a negative valence mood condition) may have felt even more regretful about whichever choice they failed to make (quiz or car). This extra negative emotion may have caused them to be assume that the worst would occur, meaning they would have judged the salient negative outcome as more likely or the more negative against any other alternative. As a result, these participants would have been more likely to choose the option that would prevent the inevitable feeling of doom exacerbated by the doubt prime. Thus, when people thought about missing a quiz, the doubt made them more motivated to avoid missing it than confidence did. When people thought about the car being burglarized, they were more motivated to go back and check on the car.

On the other hand, those primed with confidence (a positive valence mood condition) would have simply judged either of the two negative outcomes as unlikely to occur or less negative (i.e., regret their choice less), and consequently they would have been less likely to choose to remedy the negative consequences than those primed with the doubt condition. This is consistent with research on mood showing that moods can affect decisions in this manner (Mayer et al., 1992).

Interestingly, would expect different effects with counterfactual thinking involving positive outcomes. In these cases, a confidence prime might make the positive outcomes seem more likely or more positive, which would result in greater impact of counterfactuals in the confidence condition relative to the doubt condition. One might also expect that mood might mediate these effects, such that the relative impact of counterfactuals depends upon the success of the prime to produce a positive or negative mood. Future research could address these issues.

These data also were consistent with the self-confidence perspective, which would mean that participants in our experiment primed with confidence may have felt a quasi-sense of assurance about their hypothetical predicament, rendering the counterfactual condition irrelevant. For example, a participant posed with the hypothetical situation would automatically make a decision or a judgment as to how he or she would handle the situation (either weighing the car more important than the quiz or vice versa). This initial automatic decision, or "gut decision," should have stayed with the self-confident participant even after the counterfactual condition was applied. Then, once they were primed with confidence, the amount of confidence and certainty gained from the prime would have gathered toward the initial "gut" decision that they had made. After all, self-confident people should generally be correct in their decisions and thus they would stick with their initial tendency. If approximately half of the participants' initial thought was to go back to the car and the other half of the participants were leaning towards going on to the quiz, then, the results would have shown no main effect of counterfactuals in the confidence condition, which was indeed what the results of this experiment were. On the heels of this hypothesis, those primed with doubt would then feel less confident in the potential positive outcomes and would thusly choose to act on whichever negative consequence they were asked to consider (Mayer et al., 1992; Wyer et al., 1999).

Unlike the "bleeding" mechanism, the self-confidence mechanism would not be influenced by the valence of the outcome; the tendency to stay with one course of action would remain the same. However, the effect might be moderated by the target of the counterfactual (e.g., self versus other). General self-confidence relevant for making judgments about self, though not for judgments about others. Thus, if second guessing the action that a friend took rather than the self, self-confidence should not moderate the results. In addition, if the

mechanism is self-confidence, one might expect to find that self-confidence ratings after the primes would mediate the effect of the prime on the judgments. One might also expect that if the "gut reactions" were assessed, the effect of the earlier gut reactions would be stronger for those that were primed with confidence relative to doubt. Future research will examine all of these possibilities.

It is also important to point out that the type of paradigm used was in fact a hypothetical one. In future research, it may be consequential to transition the simulated situation to a "real-life" instance that the participants had experienced for themselves to see if the results could possibly differ.

Implications

The results of the current research imply that there is potentially an important role for the confidence or doubt people feel following counterfactual thinking. Our thoughts and ways of counterfactual thinking are usually the cause for the subsequent emotions that we feel. Because humans are emotional creatures, happiness is ultimately the goal in everyone's lives, whether it is for themselves or for others.

Because these emotions stem from counterfactual thinking, and if counterfactual thinking can be manipulated, then so can emotions and possibly general perspective on life. This application could be used in certain cognitive therapies where recognizing and reducing or emphasizing certain counterfactual thoughts is the main course of action. Validating positive counterfactual thoughts could cause "happy" emotions to become more pronounced and perhaps amplified, while invalidating negative thoughts could cause depressing emotions to pack less of a punch. With this in mind, more efficacious means of treatment could be assumed.

Conclusions

To conclude, this experiment was a first step in examining how feelings of confidence or doubt can impact the outcome of counterfactual thinking. Though the precise mechanism through which certainty affects counterfactuals is for now unclear, the results of this one study indicate that certainty is indeed an important factor to take into consideration when understanding the impact of counterfactuals.

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Appendix A: Scenario

Imagine that you commute to school and that you park your car in one of the lots on campus. Further imagine that, on this day, you are walking to class in a bit of a rush because you have a quiz that you do not want to be late for. On the way to class, however, you get a strange feeling that you may have left your car door unlocked. Try as you might, you cannot be absolutely certain whether or not you locked your door.

Appendix B: Car Regret Condition

Think for a minute about how upset you would be if you didn't go back to check your car, and later that day your car was burglarized. We would like you to write about your feelings and thoughts in the boxes below, pressing enter after each one. Don't worry about spelling or grammar, just type your thoughts and feelings as they come to you.

Appendix C: Quiz Regret Condition

Think for a minute about how upset you would be if you went back to check your car, found out that it was locked all along, and ended up missing your quiz. We would like you to write about your feelings and thoughts in the boxes below, pressing enter after each one. Don't worry about spelling or grammar, just type your thoughts and feelings as they come to you.

Appendix D: Certainty Description

Before you continue to the next part of the experiment, we'd like you to switch gears for several minutes and write about your personal experiences. Using the box on the next page, we would like you to recall two particular incidents in which you felt very certain. By certain, we mean a situation in which felt confident or sure. Please describe this situation in which you felt certainty -- what happened, how you felt, etc.

Appendix E: Certainty Prime Task

With vividness and detail, describe TWO situations in which you FELT CONFIDENT:

Appendix F: Doubt Prime Task

With vividness and detail, describe TWO situations in which you FELT DOUBTFUL:

Appendix G: Decision (Dependent Variable)

Would you either:

a. Definitely go back to check your car, or

b. Probably go back to check your car, or

c. Probably go straight to class for the quiz

d. Definitely go straight to class for the quiz

[1] Participants in the doubt prime condition received the same initial instructions as participants in the ertainty prime condition, due to a programming error. However, on the screen on which participants entered their situations, the doubt prime instructions were accurate. In addition, participants in the doubt prime condition did in fact write about times in which they felt doubtful. The mixup could have added to the general feeling of doubt participants had.